

Amendments to the Drawings:

The attached replacement drawing sheets add FIGS. 1-4 to the application.

Attachment: Replacement Sheets

REMARKS

Claims 1-13 are pending in this application. By this Amendment, the specification and claims 1 and 2 are amended, and FIGS. 1-4 are added to the application. Support for the amendments to claims 1 and 2 can be found, for example, in table 1 of the instant specification and in original claims 1 and 2. Support for the amendments to the specification and for FIGS. 1-4 can be found, for example, in paragraphs [0017]-[0048] of the instant specification. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Objection to Drawings

The Office Action objects to the application as lacking drawings. By this Amendment, FIGS. 1-4 are added to the application. FIGS. 1-4 show only what is described in the specification as filed. The specification is amended to make reference to FIGS. 1-4. Accordingly, withdrawal of the objection is respectfully requested.

Rejection Under 35 U.S.C. §103

The Office Action rejects claims 1-13 under 35 U.S.C. §103(a) over U.S. Patent Application Publication No. 2004/0018360 to Hugo ("Hugo"). Applicants respectfully traverse the rejection.

Claim 1 recites "[a] color sheet having a light-shielding effect, comprising at least a reflecting layer and a color layer such that the color layer is exposed to light from the reflecting layer, wherein: the reflecting layer has a solar-radiation reflectance of 60% or more in a wavelength range of 780 nm to 1350 nm; the color layer has a light transmittance of 30% or more in a wavelength range of 780 nm to 1350 nm and a solar-radiation absorbance of 10 to 80% in a wavelength range of 380 nm to 780 nm; the reflecting layer is made of a polyvinyl chloride type resin compounded with a titanium oxide type white pigment, a plasticizer and at least one material selected from the group consisting of glass beads, hollow

glass balloons, and microcapsules; and a hue of the reflecting layer is white or ivory" (emphasis added). Hugo does not teach or suggest such a color sheet.

The Office Action asserts that Hugo discloses a color sheet including a reflection layer having a solar radiation reflectance of 60% or more in a wavelength range of 780 nm to 1350 nm and a color layer having a light transmittance of 30% or more in a wavelength range of 780 nm to 1350 nm. The Office Action concedes that Hugo does not disclose the color layer has a solar radiation absorbance of 10 to 80% in a wavelength range of 380 nm to 780 nm, but asserts that it would have been obvious to obtain such a characteristic to obtain a desired aesthetic effect. Notwithstanding these assertions, Hugo would not have rendered obvious the color sheet of claim 1.

In the color sheet of the present invention, the color layer is over-coated on the side of the reflecting layer on which the color sheet is exposed to light. The reflecting layer prevents, by reflection not by light-absorption, the storage of heat from light rays in a wavelength range of 780 nm to 1350 nm, which range among the range of wavelengths in sunlight, mainly contributes to heat generation. The color layer can lessen absorption of incident light rays of the sun in a wavelength range of 780 nm to 1350 nm before the light rays reach the reflecting layer. The color layer can further lessen absorption light rays reflected by the reflecting layer before those reflected light rays reach the outside of the color layer. As a result, the color sheet is prevented from storing heat. On top thereof, desired color can be applied by the color layer.

As indicated above, claim 1 requires a reflecting layer including a titanium oxide type white pigment. The Office Action asserts that Hugo discloses a substrate made of a PVC-type resin compounded with a titanium oxide white pigment. *See* Office Action, page 4, lines 3 to 5. The Office Action correctly points out that the substrate of Hugo may be formed of a PVC-type resin, and that the substrate of Hugo may include a white pigment. *See* paragraphs

[0019] and [0073]. Applicants note, however, that Hugo does not disclose a single embodiment in which a PVC-type resin is compounded with a titanium oxide type white pigment. In the only example employing a white pigment in a substrate, the substrate is formed of an epoxy resin. *See* paragraph [0073]. That is, there is no teaching or suggestion in Hugo that would lead one of ordinary skill in the art to select the particular combination of components in the reflection layer of claim 1.

Also, claim 1 recites that the reflecting layer is formulated to have a white or ivory hue. The substrates of Hugo, by contrast, are dark (generally black or gray). *See generally* Examples. Moreover, Hugo teaches away from employing a substrate formulation that yields a white or ivory hue. In particular, Hugo discloses that:

Were the undercoat coloured white this would restore the enhanced reflection to sunlight but for aesthetic reasons this is not possible since everywhere where the coating becomes damaged or is no longer present the white undercoat would "grin" through.

See paragraph [0010]. One of ordinary skill in the art would not attempt to produce a reflection layer having a formulation that yields a white or ivory hue in view of Hugo's explicit disclosure that such a reflection layer would be impractical.

The Office Action asserts that it would have been obvious to employ a plasticizer in a reflection layer formed of a PVC-type resin, in view of the known brittleness of such resins. However, there is nothing in Hugo that would suggest to one of ordinary skill in the art the desirability of employing a plasticizer with a PVC-type resin to form the disclosed substrates. Rather, the only substrates disclosed as including PVC-type resins in Hugo are also described as "gray PVC panels." *See, e.g.,* paragraphs [0075] and [0083]. There is nothing in Hugo or in the knowledge of skilled artisans suggesting that the "gray PVC panels" employed as substrates in Hugo could or should be modified by including plasticizers therein. The only motivation to make such an improvement lies in the instant specification. *See, e.g.,* MPEP

§2143 ("The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure") (citing *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991)).

The present inventors unexpectedly discovered that, by employing a white or ivory reflecting layer made of a PVC-type resin compounded with a titanium oxide type white pigment, a plasticizer and at least one material selected from the group consisting of glass beads, hollow glass balloons, and microcapsules, it is possible to achieve a solar radiation reflectance of 60% or more in a wavelength range of 780 nm to 1350 nm. Hugo does not provide sufficient guidance to permit one of ordinary skill in the art to achieve the same result.

As Hugo does not teach or suggest a color sheet including a reflecting layer made of a polyvinyl chloride type resin compounded with a titanium oxide type white pigment, a plasticizer and at least one material selected from the group consisting of glass beads, hollow glass balloons, and microcapsules, a hue of the reflecting layer being white or ivory, Hugo does not teach or suggest each and every element of claim 1.

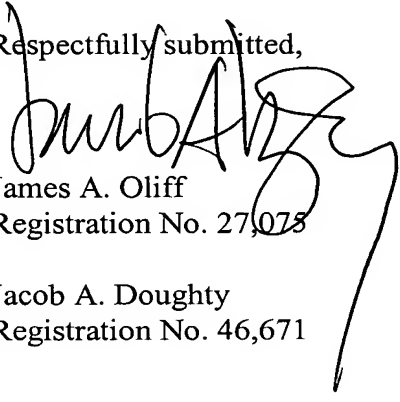
Claim 1 would not have been rendered obvious by Hugo. Claims 2-13 depend from claim 1 and, thus, also would not have been rendered obvious by Hugo. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-13 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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JAO:JAD/hs

Attachment:

- Replacement Sheets (4)

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